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DISCHARGE DEVICE FOR MEDIA

Abstract

A discharge device (1) has an external housing (4) with a discharge connecting piece (56) for receiving a media reservoir (20) with reciprocating pump (21). The housing (4) contains a handle (14) movable in relation to the pump plunger (31).
By activation thereof the pump (21) is operated, geared down, to discharge the medium therefrom through the outlet opening (3). This produces very reliable and easy handling of the discharge device (1).

Description

The invention relates to a discharge device for media which is fashioned in accordance with the precharacterising part of claim 1. It may be suitable for dispensing flowable or other media, which may be in liquid, paste or powder form or a mixture thereof. Such media are released from the discharge device at an outlet as drops, a ribbon and/or nebulised. In doing so, the medium is discharged for technical, medical, cosmetic or similar applications.

In particular, small discharge devices with just a few millilitres of stored medium can be difficult because of their small size to hold securely with one hand and operate at the same time, particularly if the axial actuation forces are very high. The axial actuation forces can be very high in order to discharge the medium under a high pressure. The discharge conveyor can contain a pressure chamber which on each actuation cycle sucks a dose of medium from a separate media reservoir, the said chamber lying immersed within the media reservoir. The media reservoir can also serve directly as a pressure chamber if it is contractible in terms of its volume, for example with a displacer or piston. The media reservoir or pressure chamber housing

forms one of two actuation components movable towards one another via a linear or similar stroke. The unit containing the displacer forms the second component. It can contain an outlet opening, located outside the pressure chamber housing, for the medium or an outlet channel connected valve-free or via an outlet valve to the pressure chamber and the outlet opening or media outlet. The valve can open depending on the pressure in the pressure chamber. It can remain open thereafter or on each actuation cycle automatically return to its closed position. To expel the medium from the outlet opening or the media outlet there are provided two or more handles movable in relation to one another. Using these handles the two components or units in the actuation device are moved towards one another to open or constrict the pressure chamber. The handles are advantageously located on the outer sides of the discharge device radially and/or axially turned away from one another.

The invention is based on the task of creating a discharge device in which the disadvantages of known designs or of the type described are avoided and which in particular ensure a simple design, uncomplicated assembly, low actuation forces and/or good protection for the discharge conveyor.

In accordance with the invention the first and/or second component of the discharge conveyor is inserted as a discrete assembly unit into an outermost housing or some other carrier. An actuation coupling is provided on the inner and/or outer side of this unit. Via this coupling, the respective component, particularly the first component, is connected in a driving manner with the handle which moves it towards the housing or the like. The second lever can be directly rigidly connected with the housing or one of the two components, particularly the first component. As a result of this design it is possible to select the actuation travel of the handles in terms of direction and/or extent to be different from the actuation travel of the components. In particular, the components can be operated stepped-down via the handles in a constant ratio and/or in a degressive and/or progressive ratio along their travel. In addition, the discharge conveyor can be arranged in the housing completely protected externally about its circumference and/or over its length. The housing is produced from plastic or the like throughout and is dimensionally stable. It can be in one piece over its entire length and/or its circumference or corresponding reach of the discharge conveyor.

One or both handles can be formed by the housing, for example circumferential sections of its external housing wall, and can encompass the discharge conveyor/ media reservoir or pressure chamber. One handle, however, can also form a front wall of the housing. Further, a handle can be formed by a front wall of the discharge conveyor/media reservoir or be located sunk within the housing. Advantageously the first and/or second handle is essentially located at a distance from one or both ends of the housing/discharge conveyor and between those ends. It can, however, also be located in the region of such an end or protrude over it in the longitudinal direction of the discharge device. The respective handle usefully forms a jacket surrounding the discharge conveyor/media reservoir in terms of front wall and/or circumference, in an area in which the remaining housing does not have to surround these parts. In this area the housing can have an opening through which the handle engages in the starting and/or depressed actuation position. One or more bearings for the handle and accompanying coupling part can be provided on the edge of this opening.

It is particularly advantageous if the housing has a connection plunger designed as a single part therewith and/or projecting freely inwards towards the receiving space for the discharge conveyor/media reservoir. The plunger serves as a tightly fitting connection with one of the two components, particularly via a plug-in or limit-stop connection that can only be joined together by an axial movement. This plunger can have passing through it an outlet channel closed about its circumference and/or the media outlet. During the actuation movement the plunger travels into the other component of the discharge conveyor. It is only via this tightly fitting connection and the actuation coupling that the discharge conveyor can be secured in the starting position in the housing part, facing the handle in the direction of actuation.

Between the coupling member and associated handle there can also be provided an intermediate member for sole transmission of the actuation forces. During actuation it executes movements relative to the coupling member and/or handle. An intermediate member of this nature can be in the form of a rod and be tensioned in its longitudinal direction between limit-stops, one of the limit-stops being movable with the handles. In particular in this case both handles can be designed as one part with each other and be movable towards each other by elastic restoring deformation.

Independently of the designs described, there can also be provided in accordance with the invention means of fixing relative to one another two components or units which would otherwise be movable towards each other, by securing to the basic body. For example, the reservoir and a pump housing can be sealed and tensioned in respect of one another on insertion into the device housing. A handle can also be fixed in respect of its position when a housing part is mounted.

The handle can be mutually set against activation with a manually operated catch. The locking member that can be pushed in and out can be provided separately from the handles or be mounted on the housing. It can also be activated without reciprocal movement of the handles. The locking member can be at the rear or front end of the housing. It can also be displaced axially or removed for unlocking.

In addition to in the claims, these further features are also revealed in the description and in the drawings, the individual features being executed jointly or severally in the form of subcombinations in an embodiment of the invention and in other fields and possibly being advantageous and in themselves protectable embodiments, for which protection is claimed here. Embodiments of the invention are shown in the drawings and are explained in greater detail below. In the drawings

Fig. 1 shows a discharge device according to the invention, partially in longitudinal cross-section,

Fig. 2 shows a cross-section through the housing of the discharge device according to **Fig.** 1,

Fig. 3 to 5 show three further embodiments in diagrams corresponding to **Fig.** 1,

Fig. 6 shows the intermediate member of the discharge device according to **Fig.** 5, in an overhead view,

Fig. 7 shows a further embodiment in partial cross-section, and

Fig. 8 shows a sixth embodiment.

The discharge device **1** according to **Fig.** 1 and 2 has a single-piece basic body **2** uninterrupted over its entire length, with a media outlet **3** at one end. Over the majority of its length and its circumference the body **2** forms a single-walled housing **4**. The housing **4** forms with its external side grip areas for encompassing with the

hand, and to a limited extent with the internal side of its jacket wall a receiving area **5**, wherein, completely sunk and as a prefitted unit, there is located a discharge conveyor **6**. To operate the discharge conveyor **6** there is provided a discharge actuator **7**.

The discharge conveyor **6** has two components **8, 9** which for actuation are movable towards each other only in a linear direction. They lie in a mid-axis **10** of the basic body **2**. The units **2, 6** are located symmetrically to an axial plane **11** of this axis **10** and asymmetrically to the axial plane **12** at right angles thereto. By narrowing the housing **4** or space **5** parallel to the plane **11** or transversely to the plane **12** the components or units **8, 9** are moved towards each other in such a way that the conveyor **6** is shortened, an outlet valve is optionally opened and the medium stored in the conveyor **6** is expelled through the outlet **3** under excess pressure. In doing so, handles **14, 15** provided only on the basic body **2** or housing **4** are located in relation to each other transversely to the axis **10**. They swing about an axis **13** at right angles to the plane **11** and parallel to the plane **12** and lie free on the circumference of the basic body **2**. On encompassing the basic body with the hand the handles **14, 15** are against the internal surface of the hand. The conveyor **6** does not need to be affected by this, but can also form a handle **16** of the discharge actuator **7** freely accessible from the outside. The handles **14, 15** are formed by opposite peripheral sections of the same longitudinal section of the housing **4** and connect to its rear end. The direction of movement or actuation of the components **8, 9** parallel to the axis **10** is denoted by **17**. The handle **14** can be moved relative to parts **2, 4, 15** in the direction of actuation **18** towards the handle **15**, with the result that the directions **17, 18** are transverse or at right angles to one another.

The parts **2, 4, 14, 15** are connected via an actuation coupling **19** only with the first component **8**. This contains, as constituent part of greatest external width, a bottle-shaped, dimensionally stable media reservoir **20** and a component of a reciprocating pump **21**. This is inserted into the reservoir **20** through the opening of the reservoir neck **23**. The neck **23** is narrower than the body of the reservoir **24**. On the neck **23** there is mounted the pump component with a securing member **22** overlapping the neck **23** on the external circumference. The said pump component is tensioned axially and is tight fitting. In the area of the reservoir **20** or its body **24**, the internal width of

the housing **4** can be closely adapted to the external width of the reservoir or reservoir body.

The pump component mounted on the reservoir **20** contains an elongated, dimensionally stable pump housing **25**, the outer and open end of which can be sealed with a lid **26** lying outside the housing **20, 25**. The lid encompasses the tube-shaped end of the house **25** closely adjacent to the internal and/or external circumference and is secured to the housing **5** by a snap-on connection. For the majority of its length the housing **25** lies inside the reservoir **20** without touching it. Within the reservoir **20** the housing delimits a pump or pressure chamber, which can be constricted with the actuator **7**. On the return stroke, viz. when the handles **14, 15** are moved away from each other again, medium is sucked from the reservoir **20** into this pressure chamber via an inlet channel **28**, for example an ascending pipe. An inlet valve **29** thereby opens in the channel **28** which closes again in a pressure-dependent manner on the pump stroke. Inside the housing **25** or pressure chamber **27** there is a spring **30**, by which the components **8, 9** or the handles **14, 15** are returned to the starting position shown in **Fig.** 1 after releasing the actuation force. The lid **26** usefully has a ring flange **72** projecting over its circumference. The ring flange sits tightly on the front surface of the neck **23** and is tensioned against this surface with the securing member **22**. At the same time the housing **25** is thereby centred vis-à-vis the reservoir **20** in its radial position. The securing member **22** is usefully a crimp ring made of relatively soft tin plate. It monitors opposite shoulder surfaces of the lid flange and a ring flange on the external circumference of the neck **23**. With an intermediate sleeve section the member **22** sits on the outer peripheral surfaces of this flange such that the lid **26** protrudes axially outwards over the member **22**.

The second component **9** is formed only by means of a preassembled piston unit which is then inserted into the housing **25**. A plunger **26** of this unit movably passes through the lid. At the inner end of the plunger **26** the unit **9** contains a displacer or piston **32** and an outlet valve **34**. The piston **32** surrounds the inner end of the plunger **31** on the external circumference in the form of a sleeve. The piston **32** is guided with a piston lip sealed on the internal circumference of the housing **25** or pressure chamber **27**. A movement of the structural parts **31, 32** directed axially inwards results in narrowing of the pressure chamber **27** and in the medium contained therein

being pressurised. The valve **34** is on the internal circumference of the piston **32** or on its face side. The valve spring can be formed by the elastically reducible piston neck or by a separate spring. It produces closing of the valve **34** at the end of the pump stroke or return stroke. The valve part movable in relation to the plunger **31** and forming a closing surface can be designed, like the piston neck, as a single piece with the piston **32**. The other valve part with the accompanying closing seat can be designed as a single piece with the plunger **31**. The medium flows out of the chamber **27** under pressure through the inside of the piston **32** and piston neck into a linear outlet channel **33** that passes through to an outlet opening **35**. The said outlet channel passes through the plunger **31** completely surrounded about its circumference as far as the front end of the plunger **31**. At this end there lies in the axis **10** the outlet opening **35** which is directly connected to the basic body **2** and the outlet **3**. The front end of the plunger **31** forms a tube-shaped connecting member **36** which is reduced in terms of external width and is provided with the arrangements **2** to **5** and **15** for a tightly fitting axial plug-in connection. The plunger **31** has at the rear end of the member **36** a limit-stop projecting at right angles thereto, for example a ring shoulder.

On actuation of the pump the plunger **31** is positionally secured axially vis-à-vis the said arrangements by means of the ring shoulder.

The pump **21** according to **Fig.** 1 is a self-priming pump on the return stroke for repeated reciprocating operation. The pump can, however, also be designed without this self-priming so that for media discharge the displacer **32** is moved only in the direction through which the pressure chamber **27** is constricted. A return stroke for priming into the chamber **27** is then unnecessary. The pressure chamber **27** can in such cases be permanently closed in the region of the inlet **29** and be filled with all the stored medium of the discharge device **1**. The arrangements **20, 22, 26** are then unnecessary. This corresponds to a design where the reservoir **20**, at its front end, is not provided with a narrowed neck but is designed with an approximately constant internal width as far as its front opening. The piston **32** is inserted axially through this opening such that it slides, sealed, along the internal circumference of the reservoir **20** and on the pump stroke constricts its reservoir chamber in the direction of the reservoir floor. In particular in this case the respective arrangement **9** or **31, 32, 34** can be preassembled with the respective arrangement **2** to **5, 7, 14, 15** so that only the

reservoir can be inserted into them. The reservoir can also be inserted, tightly fitting and preassembled, into a cap-shaped outer housing which surrounds it closely over the majority of its length on the external circumference and at the rear end. The reservoir **20** or outer housing then forms the relevant coupling member of the coupling **19**, said member being located in the region of the storage opening. In addition, the piston **32** can be preassembled with the pressure chamber housing prior to its insertion into the basic body **2**. It then forms a tight seal for the pressure chamber. It is not until a first partial stroke of the pump operation that the seal is pierced by a tip of the plunger **31**, for example by a tubular steel needle forming the outlet channel **33**.

The handle **14** is formed by a one-piece structural unit **38** separate from the basic body **2** or housing **4**. Pivoted about the axis **13** the said unit is mounted directly on the basic body **2** in a longitudinal area which is roughly equal in distance from the ends of the basic body **2** or the conveyor **6**, lies between these ends and is provided in the area of the open end of the reservoir **20** or the securing member **22**. The unit **38** encompasses the accompanying dimensionally stable, plate-shaped coupling member **39**. In the starting position the said coupling member is at right angles to the axis **10** and projects from the axis **13** only inwards into the housing **4**. The axial plane of the axis **13** parallel to the plane **12** is approximately in the jacket of the housing **4**. The other coupling member **40** is immediately in front of the coupling member **39** and is connected in a tightly fitting manner with the component **8**. The member **40** forms a counter-surface adjacent even in the starting position to the front plate surface of the coupling member **39**, for example a ring shoulder. The said ring shoulder can be formed exclusively by the rear face of the securing member **27**. The coupling member **39** forms an opening which on the external circumference surrounds the component **8**, the reservoir **20** and the neck **23** closely, yet movable transversely. The opening is passed through by the component **8** and is elastically expandable. The coupling member **39** here is fork-shaped at its free end facing the handle **15**. The fork arms which limit the opening can be expanded transversely to one another.

The unit **6** or **8** can thereby be inserted axially into the coupling member **39**. In doing so, sloping surfaces on the opening or member **22, 40** expand the coupling member **39** until it snaps in behind the coupling member **40**. The component **8** can however also

be inserted radially into the coupling member **39**. This mounting can be undertaken after the coupling member **39** has been fitted on the basic body **2** or before. Thereafter a unit comprising the component **8** and the structural unit **38** is mounted on the basic body **2**.

The unit **38** or the coupling member **39** and the handle **14** are mounted on the basic body **2** with two separate bearings **41**. The bearings **41** are on opposite sides of the unit **38** and on both sides of the plane **11** in the region of the housing jacket. The unit **38** has laterally projecting journals **32** at the radially outer end of the coupling plate **39**. The said journals engage into closely adjusted openings **43** of the jacket of the basic body **2** free of play. The opening **43** pass through the housing jacket.

The unit **38** forms a dish **44** open to the conveyor **6** and encompassing it or the component **8** on its external circumference. The external side of the floor **45** of the dish forms the handle **14** and like the coupling member **39** extends as far as the bearing **41**. Both arrangements **39, 45** project freely therefrom. In axial cross-section the handle **14** is at an obtuse angle to the coupling member **39**. In its starting position the handle projects at an acute angle to its rear end outwards from the housing **4** or axis **10**. Dish side walls **46** extending to the member **39** or bearing **41** and to the free end of the floor **45** connect to the floor **45** on both sides laterally. The pegs **42** are connected in one piece to the outsides of the dish side walls. The walls **46** engage with the housing **4** in the starting and/or operating position. At the free end of the part **40, 45** away from the bearing **41**, there may also be connected an inwardly directed dish edge **47** as shown in **Fig.** 3, which is not provided for in **Fig.** 1.

In the said positions the floor **45** and the walls **46** encompass the unit **6** and **8** on the external circumference and optionally the dish edge **47** at its rear end. The component **8** is always outwardly invisible or inaccessibly covered in this region. The jacket **48** of the housing **4** forms an opening **49** for receiving the unit **38**, for example by means of a U-shaped recess. During assembly the unit **38** can be inserted through the said opening parallel to and/or at right angles to the axis **10** and then be snapped into the openings **43** with the pegs **42**. The openings **43** are provided immediately adjacent to the free ends of the parallel U-legs. At the end of its travel during operation the unit

38 can strike the external circumference of the component 8. Limitation of travel during operation can also be achieved by striking component 9 against component 8.

The basic body 2 or the housing 4 forms a foremost end 50 with the outlet or nozzle opening 3 lying in the axis 10 and a rearmost end 51 up to which the unit 38 or the opening 49 extends. The component 8 forms a foremost end surface 52 with the front end surface of the lid 26, and optionally of the housing 25 or the reservoir 20 or the said outer housing, and a rearmost end 53 with the rear end of the reservoir 20, and optionally of the outer housing. The said rearmost end is displaced relative to the end 51 slightly inwards in the starting and/or operating position. The component 9 forms a foremost end 54 with the front end of the plunger 31 and a rear end 55 with the rear end of the plunger 31 or piston 32. The end 54 lying between the ends 50, 52 always projects over the end 52. The end 55 is always between the ends 50 or 52 and 51 or 53. The ends 52, 53 are always between the ends 50, 51, and the axis 13 is always at a distance behind the ends 50, 52, 54 or before the ends 53, 55.

The front end of the basic body 2 is formed by a housing section narrowed towards the end surface 50 relative to the space 5 or by a connecting piece 56. The said housing section or connecting piece steadily merges into the rest of the jacket 48 and is suitable, for example, for introduction into a body orifice such as the nasal orifice. The outermost connecting piece jacket 50, adjacent to the jacket 48, becomes narrower from approximately the securing member 22, the neck 23, the lid 26, the coupling member 39 or the bearing 41 as far as the end surface 50. A plunger 58 projects backwards into the housing 4 from the front end section of the jacket 57 without touching the jacket 57. The plunger 58 is designed as one piece with the basic body 2 and ends in the starting position in front of the end 52. The end surface of the plunger 58 is adjacent to the limit-stop 37. The free end of the plunger 58 forms a sleeve-shaped counter-member 59 for close-fitting reception of the connecting member 36. Also, starting from the opening 35, the plunger 58 is passed through by a linear outlet channel 60. The said outlet channel is encompassed over its entire circumference solely by the one-piece plunger 58 or by the connecting piece 57 of the basic body 2, and in the axis 10 can extend directly to the outlet 3.

For assembly, the rear end **51** with the accompanying rear end of the unit **38** forms a constantly open opening through which the unit **6** or **8** is axially inserted. Initially the connecting member **36** engages with the counter-member **59** and then the already expanded coupling member **39** spins back into its coupling position. The unit **6** or **8** is therefore mounted axially to the body **2** only by the opposite limit-stop between the coupling member **39** and the counter-member **59**. Even in the starting position, the spring **30** is able to cause pressing against the stop and therefore secure mounting with no play. The spring **30** can also be provided outside the pressure chamber **27**. For activation, the handle **14** is pressed against the axis **10**. The coupling member **39** thereby takes the component **8** with it to the front end **50** opposite component **9** at an angle and moving transversely in relation to the coupling member **40**. In doing so, the counter-member **59** can be moved into the housing **25** or the lid **26**. As a result of this movement the space **27** is narrowed in the manner described, and as the outlet valve **34** opens the medium is released from this space through the channels **33, 60** and the outlet **3** directly into the open. After releasing the handle **14** all the parts return to the starting position.

Fig. 3 to 8 uses the same reference numbers for the corresponding parts as in **Fig.** 1 and 2, therefore all the parts of the description are equally applicable to all embodiments. Also, all the features of each embodiment can be provided alternatively or additionally in all the other embodiments.

In accordance with **Fig.** 3 the reservoir **20** and the housing **4** are designed asymmetrically to the axis **10** or the plane **12**. In an axial view the housing or the space **5** and the reservoir **20** project over the external circumference of the connecting piece **56** only on one side, for example by means of rounded oblong shaping. The unit **38** and the opening **49** are provided on the face side of the protruding housing section. The unit **38** or the handle **14** thereby form a closely adjusted seal for the opening **49**. The handle **14** is here transverse or at right angles to the axis **10** and in a plane parallel to the plane of the coupling member **39**. The handle **14** is designed as a plate which stands out from the bearing **41** and on the inside forms on one side a lateral projection of the connecting piece **46** and a planar extension of the coupling member **39**. The handle **14** is dimensionally stable and is connected in a dimensionally stable manner with the coupling member **39**. The handle **14** here is at rights angles to the axis **10** or

the direction of operation **17**. The second handle **15** is formed by the end **51** and/or **53** or the jacket **48**. As in **Fig.** 1, the handle **14** or the unit **38** does not protrude over the rear end **51** in any position. In the region of the handle **14**, the handle and the housing **4** protrude shoulder-like over the connecting piece **56** further than on the opposite side of the axis **10**.

According to **Fig.** 4 the handles **14, 15** in a radial view are also approximately parallel to one another on opposite sides of the axis **10**, but at an acute angle thereto and axially offset against one another. The handle **14** connects to the rear end **51**. The handle **15** designed as a single piece with the basic body **2** is located in the region of the connecting piece **56**. It connects to a front face or shoulder between the jackets **48, 57**. The actuation device **18** is at a corresponding angle to the direction **17** or to the axis **10**. The handle **14** is formed by an inclined intermediate section of the floor **45**. The said section forms in the starting position a continuous extension of the jacket **48** in the bearing **41** area. The coupling member provided here is a cam within the dish **44** in the handle **84** area. The cam is slidable and is located at the rear end **53** of the component **8, 20**. The rear end **53** forms the coupling member **40**. In the starting position the cam **39** can be eccentric to the end surface **53**, and in the operating position roughly in the axis **10**. The rear end **51** here is formed, in the starting position, at least partially by the dish edge **47**. The rear end **51, 53** can also serve as a standing surface for stable placing of the discharge device on a table surface or the like.

To avoid unintentional activation, a catch **64** can be provided which locks the handles **14, 15** positively against activation. The rear end **51** of the jacket **48** is closed here immediately adjacent to the bearing **41** with a plate-shaped lid **47**. The said lid is mounted on the jacket **48** pivoted about a joint **65**. Thus it can be transferred to an opening position in order to insert the unit **6** or **8** into the housing **4** in a packing state. The lid **47** can be designed as one piece with the jacket **48**. For example, the joint **65** is a film joint. In the closed position the lid **47** is locked with a snap-in lock **66**. This is overcome by applying a suitably high operating force. The lid **47** at the same time forms the outwardly pivotable locking member of the catch **64**. In the closed state the lid **47** locks both the handles **14, 15** against any activation movement. Lever operation

in accordance with the invention permits relatively large grip surfaces and simple handling, yet the design is one of small volume.

In accordance with **Fig.** 7 the body of the reservoir **24** projects over the rear end **51** of the housing **4**. Its rear end section forms the securing member **22**. This is screwed with an internal thread onto an external thread of the neck **53**. Over the inside of the jacket **48** there projects a guide **61** against which the external circumference of the lid **26** is guided when inserting the component **8**. The flange **72** of the lid **26** then strikes the end of the guide **61** axially. Using the screw connection of the member **22** the flange **72** is tensioned against the end surface of the neck **23**, there being an O-ring gasket **73** in-between. It is only by means of this that the housing **25** is axially secured and radially aligned relative to the neck **23**. The guide and the limit-stops are formed by the ribs **61**. The reservoir **20** can be removed non-destructively from the basic body **2** without the discharge conveyor **6, 21** and be refilled. The end **51** forms an approximately continuous extension of the jacket of the reservoir body **24**.

Since the component **8** is mounted rigidly to the basic body **2**, component **9** here is axially displaceable relative to the basic body **2**. The coupling member **39** engages with a coupling member **40** of the plunger **31, 58**. The member **40** is formed by means of a separate intermediate piece, viz. a sleeve. The said sleeve connects the connecting member **36** securely with the plunger **58** and passes through the coupling member **39**. The member **40** can be part of the preassembled unit **38**. The free end of the member **39** forms a bearing edge **42**, which engages pivotally into a locking corner of the housing **4**. This corner zone serves as a bearing opening. It is limited by the inner side of the jacket **48** and by a projection or wall **69**. The coupling member **39** in the starting position is adjacent to the inside of the transverse wall **69**. The wall **69** separates the space **5** from the internal space of the jacket **57** and it is only the plunger **40, 58** which passes through it.

The activated position of the handle **14** is shown hatched. The handle **14** in this position protrudes over the rear end **51**. The jacket **48** is continuously closed about its circumference over roughly its entire length, particularly in the area of the member **22**. It is only at a distance from the end **51** that there is provided the small puncture **49**, which is closed about its circumference, for the coupling member **39** to pass

through. As soon as the coupling member **40** engages with the connecting piece **31** or **58**, the bearing members of the knife-edge bearing **41** are radially secured positioned relative to one another. On activating the handle **14** the coupling member **39** pushes the piston unit into the housing **25** in the manner of a single-arm lever.

The connecting piece **56** is axially displaceable with the piston unit with respect to the basic body **2**, **4**. The connecting piece **56** is structural part separate from the housing **4**, the rear end of which is guided with a sliding guide **68** on the basic body **2**. The guide is formed by a sleeve-shaped collar **68** of the housing **4**. The collar **68** forms the front end of the basic body **2** and stands out from the wall **69**. On its internal side the rear expanded end of the connecting piece **56** is guided as far as the limit-stop on the wall **69**. When the handle **14** is activated and returned, the connecting piece **56** therefore performs an axially reciprocating movement in relation to the housing **4**, which is useful particularly in the case of nasal administration.

The collar **68** is divided around its circumference and in one part of its circumference is formed by a separate member **70**. This pen-like or dish-like member **70** is a component part of the unit **38** and is designed as a single piece with the members **14**, **39**. On activating the handle **14** the member **70** is moved radially away from the discharge head **56**. In the locked position the dish **70** is secured by a locking member **71** which can be located axially on the external circumference of the collar **68** and be removed non-destructively. In the locked position the locking member **71** is secured to the collar **68** and the counter-member **70** by a snap-in connection.

The connecting piece **56**, including the collar **68**, **70**, is coverable with a lid cap **67**, the open marginal zone of which forms the locking member **71**. Following non-destructive removal of the lid **67** the catch **64** is unlocked. By replacing the lid **67** it is locked again.

The device **1** according to **Fig.** 8 is of a similar design to that according to **Fig.** 4. The collar **68** connects the housing **4** in a single piece with the connecting piece **56** and like the jacket **48** forms a sliding guide for the component **8**. To this end the external circumference of the securing member **22** slides along the internal circumference of the collar **68**. The collar **68** has a greater width than the connecting piece **56** and a

smaller width than the jacket **48** in the region of the reservoir body **24**. The member **22** is here a screw cap separate from the basic body **2** and from the housing **25, 26**, which, also preassembled, can be of a tight-fitting or one-piece design with the housing **25, 26**. For removing the reservoir **20** from the housing **4**, the closure part **44** must be moved to an open position or be detached by disengaging the bearing **41**. This results in the opening then being sufficiently large. The coupling member **39** is formed by the dish edge **47**, which is curved towards the floor of the reservoir **20** and which, with its edge surface, slides against that floor. In the starting position the external shape of the basic body **2** is approximately symmetrical to the plane **12**, including in the region of the handles **14, 15**, the grip area **14, 15** forming a stepped, greatest enlargement of the discharge device **1** similar to a ball-like door knob.

The media outlet **3** according to **Fig.** 7 and 8 is designed as an nebuliser nozzle. Said nozzle has a nozzle cap through which a nozzle opening passes, and a nozzle core which engages with the nozzle cap. Between the nozzle cap and the nozzle core there is provided a guiding device through which the medium is put into an eddy or swirling flow about the nozzle axis. All the effects and/or properties described, such as determination of position and the like, may be provided exactly as explained, only approximately as explained or greatly deviating therefrom.

Claims

1. Discharge device for media with a media outlet (**3**), a manual discharge actuator (**7**), first and second handles (**14** to **16**), a discharge conveyor (**6**) for expelling the medium from the outlet (**3**) by operating the handles (**14, 15**), first and second actuation components (**8, 9**) of the discharge conveyor (**7**) movable with the handles (**14** to **16**) in an actuation direction (**17**), and with an outermost housing (**4**) receiving the discharge conveyor (**7**) in an operating position, **characterised in that** at least one of the components (**8, 9**) of the discharge conveyor (**7**) is inserted into the housing (**4**) as a separate assembly unit and in that, via first and second coupling members (**39, 40**) of an actuation coupling (**19**) substantially located on the external side, the assembly unit is

connected with at least one of the handles (**14** to **16**), particularly in a step-down ratio.

2. Discharge device according to claim 1, characterised in that the first component (**8**) of the discharge conveyor (**6**) contains a pressure chamber (**27**) for the medium, a media reservoir (**20**), a conveyor housing (**25**), an inlet channel (**28**) for the medium, an outlet valve (**29**), a return spring (**30**) for the components (**8, 9**), the second handle (**15** or **16**), the second coupling member (**40**) of the coupling (**19**) and/or a securing cap (**22**), in that in particular the second component (**9**) contains an actuation plunger (**31**) with an outlet channel or the like leading to the outlet (**3**), a displacer piston (**32**), an outlet valve (**34**) and/or a connecting member (**36**) for connecting to the housing (**4**) and in that preferably the discharge conveyor (**6**) contains a reciprocating pump (**21**), the pressure chamber (**27**) of which lies within the outer wall limitations of the media reservoir (**20**).

3. Discharge device according to claim 1 or 2, characterised in that at least one of the handles (**14** to **16**) and/or at least one coupling member (**39, 40**) is movably mounted on the housing (**4**), in that in particular the first coupling member (**39**) is connected rigidly or in one piece with the first handle (**14**) and in that preferably the housing (**4**) substantially completely receives the discharge conveyor (**6**) and/or the first handle (**14**) forms an outermost shield for the discharge conveyor (**6**), the said shield being immediately adjacent to the discharge conveyor (**6**).

4. Discharge device according to any one of the preceding claims, characterised in that at least one of the handles (**14** to **16**) and/or at least one coupling member (**39, 40**) is formed by a structural body separate from the housing (**4**), in that in particular at least one of the handles (**14, 15**) is designed as a single piece with the housing (**4**) and in that preferably the housing (**4**) contains a main housing part extending from the outlet (**3**) approximately to the opposite end of the discharge conveyor (**6**) and a wall section forming at least one of the handles (**14, 15**) and being connected to the housing part.

5. Discharge device according to any one of the preceding claims, characterised in that during the actuation movement the coupling parts (**39, 40**) intermesh in a tilting and/or transversely movable manner, in that in particular the first coupling member (**39**), as pressure transporter, is adjacent to an outer shoulder of the second coupling member (**40**) and in that preferably the first coupling member (**39**) is designed as a partially ring-shaped, spring-mounted snap-in member for axially and/or radially placing onto a cross-sectionally ring-shaped neck (**23**) of the discharge conveyor (**6**), and/or as a transporter cam for installation at the end (**53**) of the discharge conveyor (**6**) away from the second component (**9**).

6. Discharge device according to any one of the preceding claims, characterised in that the coupling (**19**) is at a distance from and between an outlet opening (**35**) of the discharge conveyor (**6**) and the opposite end (**51**) of the housing (**4**), in that in particular a pivotal axis (**13**) of the first coupling member (**39**) is approximately in an outermost wall (**48**) of the housing (**4**) and in that preferably the end (**51**) of the housing (**4**) opposite the outlet (**3**) forms an insertion opening for the discharge conveyor (**6**).

7. Discharge device according to any one of the preceding claims, characterised in that the housing (**4**) forms a reception chamber (**5**) for the discharge conveyor (**6**) and next to it there is provided a discharge connecting piece (**56**) with the outlet (**3**), said connecting piece being narrower than the reception chamber (**5**), in that in particular the discharge connecting piece (**56**) has within an outermost external jacket (**57**) a freely projecting plunger (**58**) or the like for connecting with the second component (**9**) and in that preferably the discharge conveyor (**6**), the discharge connecting piece (**56**) and/or the outlet (**3**) are coaxial and at least one of the handles (**14** to **16**) protrudes radially over the discharge connecting piece (**56**).

8. Discharge device according to any one of the preceding claims, characterised in that the first handle (**14**) forms a dish structure (**44**) open to the discharge conveyor (**6**) and receiving same, in that in particular the first coupling member (**39**) and the first handle (**14**) form a two-armed lever with a pivotal

axis (**13**) in-between them and in that preferably the first handle (**14**) engages with an opening (**49**) closely adapted thereto in a substantially closing manner in at least one position.

9. Discharge device according to any one of the preceding claims, characterised in that the second component (**9**) of the discharge conveyor (**6**) is essentially only non-positively secured by an axial plug-in connection (**36, 59**) against movements relative to the housing (**4**) parallel to the direction of actuation (**17**), in that in particular the second component (**9**) is positionally secured axially in both opposing directions relative to the housing (**4**) by the direct connection with the first component (**9**) and in that preferably the first coupling member (**39**) is mounted on the housing (**4**) by means of a snap-in connection.

10. Discharge device according to any one of claims 2 to 9, characterised in that the housing (**4**) is designed for mutual positional security of the media reservoir (**20**) and the conveyor housing (**25**), in that in particular the discharge connecting piece (**56**) is movable with the discharge actuator (**7**) relative to the housing (**4**) and in that preferably a housing chamber (**5**) for receiving the first component (**8**) with a wall (**69**) through which the second component (**9**) passes is separate from the discharge connecting piece (**56**).

11. Discharge device according to any one of the preceding claims, characterised in that the first component (**8**) with a sliding guide (**68**) is mounted on the housing (**4**), in that in particular the securing cap (**22**) forms a sliding surface of the sliding guide and in that preferably the housing (**4**) subsequent to the sliding guide (**68**) forms the handles (**14, 15**) and is essentially widest in the region of the handles (**14, 15**).

12. Discharge device according to any one of the preceding claims, characterised in that between the first coupling member (**39**) and the first handle (**14**) there is located in the actuation force flow at least one intermediate actuation member (**62**) movable relative to the said member and said handle, in that in particular the intermediate member (**62**) is at least one push rod (**63**) located

within the housing (**4**) and in that preferably the intermediate member (**62**) is located substantially entirely between the coupling (**19**) and the opposite end (**51**) of the housing (**4**) to the outlet (**3**), on the one hand, or between the discharge conveyor (**6**) and the internal surface of the housing (**4**), on the other.

13. Discharge device according to any one of the preceding claims, characterised in that to cover the media outlet (**3**) there is provided a removable lid (**67**), in that in particular the lid (**67**) overlaps the housing (**4**) on the outside and in that preferably the lid (**67**) is provided as positional security for first handle (**14**).

14. Discharge device according to any one of the preceding claims, characterised in that a catch (**64**) is provided for mutual locking of the handles (**14, 15**) and/or components (**8, 9**), in that in particular the catch is activated by a catch lever (**67**) separate from the handles (**14, 15**) and in that preferably a locking member of the catch (**64**) forms a closure lid (**47, 67**) at one end of the housing (**4**).

3 pages of drawings